

REVISION OF SECTIONS 208, 420, 605 AND 712
 GEOSYNTHETICS AND GEOTEXTILES

Sections 208, 420, 605 and 712 of the Standard Specifications are hereby revised for this project as follows:

Delete subsection 208.02(b) and replace with the following:

- (b) *Silt Fence*. Silt fence posts shall be metal or wood with a minimum length of 42 inches. Metal posts shall be “studded tee” or “U” type with minimum weight of 1.33 pounds per linear foot. Wood posts shall have a minimum diameter or cross section dimension of 1.5 inches nominal. Geotextile shall be attached to wood posts with three or more staples per post, or to metal posts with three or more wires per post.

Silt fence geotextile shall conform to the following requirements:

PHYSICAL REQUIREMENTS FOR SILT FENCE GEOTEXTILES

Property	Wire Fence Supported Requirements	Self Supported Requirements Geotextile elongation 50% minimum	Test Method
Grab Strength, lbs	90 minimum	124 minimum	ASTM D 4632
Permittivity sec-1	0.05	0.05	ASTM D 4491
Ultraviolet stability	minimum 70% Strength Retained	minimum 70% Strength Retained	ASTM D 4355

Delete subsection 208.02(g) and replace with the following:

- (g) *Outlet Protection*. Outlet protection riprap shall conform to section 506. Erosion control geotextile shall be a minimum Class 2, conforming to subsection 712.08.

Delete subsection 420.02 and replace with the following:

420.02 Geotextiles and geomembranes shall meet the applicable requirements of subsections 712.07 and 712.08 for the use intended. Geotextiles for erosion control for drainage or for separators may be Class 1, Class 2, or Class 3, conforming to subsection 712.08, if the class is not specified on the plans.

Asphalt cement binder for the paving geotextile shall be the same grade as the asphalt cement used for Item 403.

Paving geotextile shall be a minimum Class 3, conforming to subsection 712.08.

Subsection 420.08 shall include the following:

Geotextile for landscape weed barrier shall be a minimum Class 3, conforming to subsection 712.08.

In subsection 605.03, delete the second sentence of the first paragraph and replace with the following:

Sufficient Geotextile (Drainage) (Class 3) shall be placed along the bottom and sides of the trench as shown on the plans to provide the required overlap over the top of the filter material.

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In subsection 605.05, delete the second sentence and replace with the following:

The trench shall be lined with Geotextile (Drainage) (Class 3) and filled with the designated filter material to the depth shown on the plans.

Delete subsection 712.07 and replace with the following:

712.07 Geosynthetics. Geosynthetic rolls shall be furnished with suitable wrapping to protect against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled to provide product identification sufficient for inventory and quality control purposes. Rolls shall be stored in a manner which protects them from the elements. If stored outdoors, they shall be elevated and protected with a waterproof cover. The Contractor shall submit a certified test report from the manufacturer in accordance with subsection 106.13 including all data necessary to verify compliance with this specification.

Securing pins shall be made from galvanized steel wire or other approved wire material, 0.091 inch or larger in diameter. They shall be U-shaped, with legs 6 inches long and a 1 inch crown.

Physical requirements of geosynthetics shall meet or exceed what is shown in Table 712-1. Unless otherwise stated, all property values represent minimum average roll values (MARV) in the weakest principle direction. Stated values are for non-critical, non-severe conditions. Lots shall be sampled in accordance with ASTM D 4354.

- (a) *Geomembrane.* Geomembrane shall be manufactured for stopping seepage loss. The lining shall consist of virgin polyvinyl chloride (PVC) resins, plasticizers, stabilizers, and other necessary materials that, when compounded, shall meet or exceed the physical requirements for the thickness specified in Table 712-1.

Individual widths of PVC materials shall be fabricated into large sections by dielectric sealing into a single piece, or into a minimum number of panels, up to 100 feet wide, as required to fit the facility. Lap joints with a minimum joint width of ½ inch shall be used. After fabrication, the lining shall be accordion folded in both directions and packaged for minimum handling in the field. Shipping boxes shall be substantial enough to prevent damage to contents.

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**Table 712-1
PHYSICAL REQUIREMENTS FOR GEOMEMBRANE**

Property	Thickness			Test Method
	0.25 mm (10 mil)	0.51 mm (20 mil)	0.76 mm (30 mil)	
Thickness, % Tolerance	±7	±5	±5	ASTM D 1593
Tensile Strength, kN/m (lbs./in.) width	3.50 (20)	8.75 (50)	12.25 (70)	ASTM D 882, Method B
Modulus @ 100% Elongation, kN/m (lbs./in.)	1.58 (9)	3.50 (20)	5.25 (30)	ASTM D 882, Method B
Ultimate Elongation, %	350	350	350	ASTM D 882, Method A
Tear Resistance: N (lbs)	18 (3.2)	29 (6.5)	38 (8.5)	ASTM D 1004
Low Temperature Impact, °C (°F)	-23 (-13)	-26 (-15)	-29 (-20)	ASTM D 1790
Volatile loss, % max.	1.5	0.9	0.7	ASTM D 1203, Method A
Pinholes, No. /8 m ² (No. Per 10 sq. Yds.) max.	1	1	1	
Bonded Seam Strength, % of tensile strength	80	80	80	

Delete subsection 712.08 and replace with the following:

712.08 Geotextiles. Geotextile rolls shall be furnished with suitable wrapping to protect against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled to provide product identification sufficient for inventory and quality control purposes. Rolls shall be stored in a manner which protects them from the elements. If stored outdoors, they shall be elevated and protected with a waterproof cover. The Contractor shall submit a certified test report from the manufacturer in accordance with subsection 106.13 including all data necessary to verify compliance with this specification.

Securing pins shall be made from galvanized steel wire or other approved wire material, 0.091 inch or larger in diameter. They shall be U-shaped, with legs 6 inches long and a 1 inch crown.

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Physical requirements for all geotextiles shall conform to the requirements of AASHTO M-288. Materials shall be selected from the New York Department of Transportation's Approved Products List of Geosynthetic materials that meet the National Transportation Product Evaluation Program (NTPEP) and AASHTO M-288 testing requirements. The current list of products that meet these requirements is located at:

www.dot.state.ny.us

The Geotextile Approved Products List may be accessed by clicking on the following tabs once on the NYDOT site to:

- (1) Publications
- (2) more
- (3) site index tab
- (4) approved list of Materials & Equipment
- (5) geosynthetics for Highway Construction
- (6) geotextiles

Table 712-2
TYPICAL VALUES OF PERMEABILITY COEFFICIENTS¹

Turbulent Flow	Particle Size Range Millimeters (inches)		Effective Size	Permeability Coefficient cm/s
	D max	D min	D 20 mm (inches)	
Derrick STONE	3000 (120)	900 (36)	1200 (48)	100
One-man STONE	300 (12)	100 (4)	150 (6)	30
Clean, fine to coarse GRAVEL	80 (3)	10 (1/4)	13 (1/2)	10
Fine, uniform GR-AVEL	8 (3/8)	1.5 (1/16)	3 (1/8)	5
Very coarse, clean, uniform SAND	3 (1/8)	0.8 (1/32)	1.5 (1/16)	3

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Table 712-2(continued)
TYPICAL VALUES OF PERMEABILITY COEFFICIENTS¹

Laminar Flow	Particle Size Range Millimeters (inches)		Effective Size	Permeability Coefficient-k cm/s
	D max	D min	D 10 mm	
Uniform, coarse SAND	2 (1/8)	0.5 (1/64)	0.6	0.4
Uniform, medium SAND	0.5	0.25	0.3	0.1
Clean, well-graded SAND & GRAVEL	10	0.05	0.1	0.01
Uniform, fine SAND	0.25	0.05	0.06	40 x 10 ⁻⁴
Well-graded, silty SAND & GRAVEL	5	0.01	0.02	4 x 10 ⁻⁴
Silty SAND	2	0.005	0.01	1.0 x 10 ⁻⁴
Uniform SILT	0.05	0.005	0.006	0.5 x 10 ⁻⁴
Sandy CLAY	1.0	0.001	0.002	0.05 x 10 ⁻⁴
Silty CLAY	0.05	0.001	0.0015	0.01 x 10 ⁻⁴
CLAY (30% to 50% clay sizes)	0.05	0.0005	0.0008	0.001 x 10 ⁻⁴
Colloidal CLAY (-2 μm, 50%)	0.01	10	40	10 ⁻⁹

¹ Basic Soils Engineering, R.K. Hough, 2nd Edition, Ronald Pess Co.; 1969, Page 76.

Note: Since the permeability coefficient of the soil will be unknown in most non-critical, non-severe applications for erosion control and drainage, the soil-permeability coefficients listed in Table 712-2 may be used as a guide for comparing the permeability coefficient of the fabric with that of the in-place soil.

In subsection 712.12, second paragraph, delete the first sentence and replace with the following:

Drainage geotextile shall be a minimum Class 3, conforming to AASHTO M 288.